REMARKS

In the Office Action, the examiner requires the applicant to submit a substitute specification including the claims under 37 CFR 1.125(a) because the they are not fully comprehensive. Accordingly, the applicant has submitted concurrently herewith a substitute specification and claims and a mark-up version thereof showing changes made. The substitute claims and abstract with mark-up are included in this amendment while the substitute specification with mark-up are in the separate set paper. This is to verify that no new matter has been introduced in the substitute specification, claims and abstract.

The examiner rejected Claims 1-19 under 35 U.S.C. 112, second paragraph, as being indefinite failing to particularly point out and distinctly claim the subject matter of the invention. Accordingly, the applicant has amended the set of claims to more clearly specify the features of the present invention. Claim 2 has been canceled. The language "arrival directions" involved in creating the simulated pattern is changed to "emitting direction" to differentiate the "arrival direction" from the radiowave emitting source (such as illegal radio station).

Please note that the language "one position" in Claims 1 and 12 means a position of a particular monitor station (ex. 12a) which monitors the radiowave from the radiowave emitting source. The monitor station monitors at the "one position" a radiowave from a radiowave emitting source located at an unknown position. Thus,

the "one position" is not the position of the "radiowave emitting source". Before actually monitoring the radiowaves, the method and apparatus of the present invention creates the simulated patterns of intensities and emitting directions by emitting a simulated radiowave from the "one position" of the monitor station while changing the direction of the simulated radiowave. As is well known in the art, the electric fields intensities of the radiowave vary by factors including distance, direction, objects (building, mountains, etc.) on the ground, etc. Thus, with use of the map (topological) data, such simulated patterns of intensities and emitting directions can be created through a computation process as shown in Table 1 of page 18 and Figure 3. Thus, the simulated patterns created in advance show the intensities and directions of other "plural locations" (Claims 1 and 12).

It is important to note that since the radiowave performs the same way when the transmitting position and the receiving position are replaced with one another, i.e., the radiowave has a reciprocity principle. The present invention makes use of this character of radiowave as stated at page 24, lines 9-14 in the substitute specification, which reads as follows:

> In radiowave propagation, generally a radiowave propagation path is reversible between the emission side and the receiving side, and a propagation attenuation amount is also reversible, i.e., a propagation attenuation amount is the same when the emission and receipt are replaced with one another.

In other words, by changing the direction of the simulated radiowaves in an opposite direction, the pattern of intensities

from various locations and directions to the "one position" of the monitor station can be simulated. Thus, when the monitor station monitors the radiowave at the "one position", the "observed pattern" should be similar to one of the simulated patterns prepared in advance. Although three monitor stations 12a-12c are shown in the present application, in principle, the present invention can be implemented by one monitor station. To incorporate two or more monitor stations is advantageous because it increases the sensitivities for monitoring the radiowaves (page 23, lines 6-15 of the substitute specification).

Therefore, since the principle of reciprocity is utilized in the present invention, it is unnecessary to perform the computer simulation for pre-compiling the simulated waveforms from each and every position in the observation area to the monitor station as required in the conventional technology. Thus, the time and amount of computation jobs for creating the data base of the simulated patterns can be dramatically reduced.

The applicant believes that the amendment in the set of claims and the above comments clarify the features of the present invention and thus, the rejection under 35 U.S.C. 112, second paragraph, is no longer applicable to the present invention.

In the Office Action, the examiner rejected Claims 1-19 under 35 U.S.C. 102(e) as being anticipated by Perez-Breva et al. (U.S. Patent No. 6,782,265). The examiner rejected Claims 1-19 under 35 U.S.C. 102(e) as being anticipated by Wax et al. (U.S. Patent No.

6,249,680). The examiner rejected Claims 1-19 under 35 U.S.C. 102(e) as being anticipated by Sugiura et al. (U.S. Patent No. 6,140,964).

The cited Perez-Breva et al. reference is directed to a method for determining a location of mobil unit (MU) such as cellular phone. A location of a remote MU is determined by comparing a snapshot of a predefined portion of the radio-frequency (RF) spectrum taken by the MU to a reference database containing multiple snapshots taken at various locations. The result of the comparison is used to determine if the MU is at a specific location. The location determination technology of the cited Perez-Breva et al. reference is based on the principle that any location has a unique RF spectrum (fingerprint). The MU is equipped with circuitry and software that is capable of capturing information from predetermined portions of the RF spectrum.

The MU compares the fingerprint captured at the location with the fingerprint from the pre-compiled data base. The fingerprint database contains a number of fingerprints along with their corresponding location identities. The captured fingerprint is compared with the fingerprints in the database and the fingerprint in the database that is closest to the generated fingerprint is selected as the match. The corresponding location in the database is then chosen as the location of the MU.

In Perez-Breva et al., it is apparent that the MU and the pre-compiled data base of fingerprints have to interact with one

another to determine the position of the MU. The MU, the communication network, and the other party are in the same system for achieving the intended functions. The MU is equipped with the specific software and hardware to determine its position by itself. In the present invention, however, the radiowave emitting source (ex. illegal radio station) does not interact in any way with the radiowave monitoring apparatus. The radiowave emitting source generates a simulated radiowave without regard to the radiowave monitoring apparatus. Therefore, the basic principle of operation and structure of the present invention is completely different from that disclosed by the cited Perez-Breva et al. reference.

The cited Wax et al. reference is directed to a method and system for determining the position of a mobile radio transmitter such as cellular phone in a communication system. In the cited Wax et al. reference, the system tracks and locates all cellular telephone traffic from a single base station. The method uses multipath signals in order to determine a transmitter's location. More specifically, signals from a mobile transmitter are sent to an antenna array of a base station receiver in the CDMA cellular telephone network. Based upon the signals received at the antenna array, the base station determines a signal signature. The signal signature is any location-dependent feature derived from the set of direct and multipath signals received at the antenna array of the single base station from the transmitter at a given location.

After the signal signature has been determined, it is then compared to a database containing similar calibrated signal signatures and their corresponding locations. The database of calibrated signal signatures and corresponding locations is generated by a calibration procedure in which a calibration mobile phone roams a service area of the base station. A mobile having an unknown location can then be located by searching such a database and identifying a location whose calibrated signature best matches the measured signature. The calibrated and measured signatures are compared by calculating the similarities between the signatures of the measured signal and those of the calibrated signals.

In the method of the cited Wax et al. reference, the signature of an actual signal from the mobile radio transmitter and its position information are collected in advance in the data base at the base station as calibration signatures. The location of the mobile radio transmitter is determined by comparing the signatures detected by the array of antennas with the calibrated signatures in the data base. In the present invention, however, the monitor station monitors a radiowave from a radiowave emitting source located at the one position and compares the observed pattern with the simulated pattern. As noted above, the simulated patterns are created by emitting a simulated radiowave from the position of the monitor station while changing the direction of the simulated radiowave. In other words, the simulated patterns are created without using any radiowave from the radiowave emitting source.

Therefore, the basic principle of operation and structure of the present invention is completely different from that disclosed by the cited Wax et al. reference.

The cited Sugiura et al. reference is directed to a radio mobile station position detection method for finding the position of a mobile station. In the position detection method, the mobile station measures the reception radio wave strength levels from a plurality of base stations at a measuring point to convey the measurement results through a base station to a control station. The control station uses a neural network to learn a correlation between the reception radio strength levels and the position of the mobile station on the basis of the measurement results at a plurality of measuring points and the positional data at the measuring points. When the mobile station sends the measurement results of the reception radio strengths from the plurality of base stations measured at the plurality of measuring points, the control station estimates the position of the mobile station bearing the measurement results based on the correlation between the reception radio strength levels and the positions of the mobile station obtained through the learning.

As noted above, in the method of the cited Sugiura et al. reference, the mobile station measures the reception radio wave strength levels from the plurality of base stations at the measuring point. The mobile station then sends the measured results to the control station where the position of the mobile

station is estimated by comparing the reception signal with the data obtained through the learning. The present invention, however, does not involve a plurality of base stations or a control station. Based on the principle of reciprocity, the monitor station monitors a radiowave from a radiowave emitting source located at the one position and compares the observed pattern with the simulated pattern. Therefore, the basic principle of operation and structure of the present invention is completely different from that disclosed by the cited Sugiura et al. reference.

As discussed above, the present invention defined in the claims as amended is fully distinguishable from the technologies disclosed by the cited references. Therefore, the rejection under 35 U.S.C. 102(e) is no longer applicable to the present invention.

In view of the foregoing, the applicant believes that Claims 1, 3-19 are in condition for allowance, and accordingly, the applicant respectfully requests that the present application be allowed and passed to issue.

Respectfully submitted,

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Dated: 8/15/2005

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AMD-KT09.001
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